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10/591,609

09/05/2006

Jurgen Meyer

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EXAMINER

LOEWE, ROBERT S

ART UNIT

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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/591,609 | Applicant(s) MEYER ET AL. | |
| | Examiner ROBERT LOEWE | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/28/08 has been entered.

Claim Interpretation

It has been recognized by the Examiner that instant claim 1 is written in such a manner that the limitation "characterized by vinyl groups or vinyl silyl groups fixed to the surface, hydrophobic groups such as trimethylsilyl and/or dimethyl silyl and/or monomethyl silyl additionally being fixed to the surface" can be broadly and reasonably be interpreted to read on a silylating agent such as vinyltrimethylchlorosilane. Such a silane, once bound to the silica, has vinyl silyl groups fixed to the surface and dimethyl silyl groups additionally bound to the silica. Further, the instant specification teaches this interpretation; namely that "the vinyl silyl and methylsilyl groups can be applied to the silica by means of one compound" (paragraph 0018 of instant specification). Additionally, the limitation "such as" does not limit the hydrophobic groups to trimethyl- dimethyl- or monomethyl-silyl groups. Any hydrophobic group would satisfy this limitation of instant claim 1.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Bergstrom et al. (US Pat. 6,384,125), and further evidenced by Griffith et al. (US Pat. 5,908,660) and Burns et al. (US Pat. 6,051,672).

Claim 1: Bergstrom et al. teaches a silanized, structurally-modified silica characterized by vinyl silyl groups being fixed to the silica surface and further comprising hydrophobic groups such as dimethylsilyl additionally being fixed to the silica surface (10:40-67 and Table 2). Bergstrom et al. additionally teaches that the surface-modified silicas have a BET surface area of 100 to 500 m²/g (3:57-61), an average particle size of 5-100 nm (claim 3), and a pH range of about 3 to 8 (Table 2). The Office realizes that all of the claimed properties are not positively stated by Bergstrom et al. However, Bergstrom et al. teaches all of the claimed ingredients. Therefore, the claimed physical properties, i.e., the DBP absorption and carbon content would implicitly be achieved by a composition with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support that applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients.

Further, Bergstrom further teaches that the surface-modified silica is prepared according to US patents 5,908,660 (Griffith et al.) and 6,051,672 (Burns et al.), whose references are incorporated into the teaching of Bergstrom et al. (7:22-27). Burns et al. teaches in Table 1, a

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carbon content of no more than 10% based on the fact that only about 50% of the trimethylsiloxy groups of table 1 is made up of carbon ($16.55\% * 0.50 = 8\%$). The remaining carbon containing species contribute little to the overall carbon content.

While Bergstrom does not teach that the silicas employed therein are pyrogenically produced, this limitation of instant claim 1 is presented as a product-by-process claim. The courts have stated that even though product-by-process claims are limited and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Barthel et al. (US application 2003/0138715) and further evidenced by Scharfe et al. (US 2003/0138715) and Mangold (US Pat. 5,976,480).

Claim 1: Barthel et al. teaches a process of preparing surface-modified, low-silanol silica by reacting one or more organosilanes with silica (abstract). Barthel et al. teaches that suitable silylating agents include vinylalkoxysilanes and alkylalkoxysilanes (paragraph 0039). Specifically, Barthel et al. teaches that suitable silanes include vinyltrimethylchlorosilane and divinyltetramethyldisilazane (paragraph 0039). Both of these species of silanes would inherently yield silanized silica having **both** vinylsilyl groups and methylsilyl groups are required by instant claim 1. Barthel et al. additionally teaches that the surface-modified silicas have a BET surface

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area of 25 to 500 m²/g (paragraph 0123), an average particle size of 5-100 nm (paragraphs 0077 and 120), and a carbon content of 1.7-5.4% (Table 1-1). Barthel et al. further teaches that the starting silica has, for example, a pH of 4.1 (paragraph 0183).

Barthel et al. is silent with regards to the DPB absorption. However, Barthel et al. teaches all of the claimed ingredients. Therefore, the DBP absorption would inherently be achieved by a composition with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support that applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients. Further, pyrogenically prepared silica, the preferred starting silica of Barthel et al., is known to have DBP absorption values which fall within the range of instant claim 1, as evidenced by Scharfe (table in paragraph 0011) and Mangold (abstract).

Claim 2: Barthel et al. teaches a process for producing silanized, structurally modified silica comprising: (a) mixing/treating the pyrogenically prepared silica and silylating agents (paragraph 0050-0057), (b) reacting the pyrogenically prepared silica and silylating agent mixture by heating the mixture (paragraphs 0058-0060), and (c) purifying the silylated silica by means of mechanical action (paragraphs 0061-0067). Barthel et al. further teaches additional steps which may take place following the purification of the pyrogenically-produced silica, involving mechanical compaction/destruction by means of a press-roller, or grinding equipment such as ball mills (paragraphs 0064-0065). Therefore, Barthel et al. teaches structural modification steps involving mechanical action which acts to destructure the silica. It is the position of the Examiner that the process of compaction inherently causes the silica to undergo

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destructuring. The limitation that the silanized, structurally modified pyrogenically produced silica is recovered is inherently taught by Barthel et al. by the simple fact that Barthel et al. performs analysis of the final silylated silica (i.e., the silica must have been recovered in order to perform the analytical testing).

Claim 3: Barthel et al. further teaches that the silica can be first sprayed with water and then with the surface-modifying agent (paragraph 0185).

Claim 4: Barthel et al. further teaches that the silica is treated with the surface-modifying agent in vapor form (paragraph 0185). It is the position of the examiner that by introducing the surface-modifying agent via atomization through a nozzle, Barthel et al. teaches that the surface-modifying agent is introduced in vapor form. One definition of vapor as defined by Merriam-Webster is "diffused matter (as smoke or fog) suspended floating in the air and impairing its transparency". While vapor is also defined as a material in its gaseous state, one could reasonably apply the first definition cited above; therefore Barthel et al. anticipates the limitations of instant claim 4.

Claims 5 and 6: Barthel et al. further teaches many post surface-modification steps can be performed, including grinding and compacting and conditioning (paragraphs 0061-0069).

Claim 7: Barthel et al. further teaches that the silicone rubber can be used as fillers (paragraph 0180).

Claim 8: Barthel et al. further teaches that prior to the heat-treatment step, a mixing step can be performed (residence time of 2.5 hours at 25 °C as taught in paragraph 0187).

Relevant Art Cited

The prior art made of record and not relied upon but is considered pertinent to applicants disclosure can be found on the attached PTO-892 form. Specifically, Applicants cite US Pat. 6,193,795 to Nargiello in their Remarks section of the amendment, filed on 7/28/08. This patent is made of record by its inclusion on the attached PTO-892 form.

Response to Arguments

Applicant's amendments regarding claims 1 and 2 (Bergstrom et al.) have been fully considered. The rejection of instant claim 1 under Bergstrom et al. has been maintained since Bergstrom et al. explicitly teaches surface-modified silica having the claimed hydrophobic groups of instant claim 1 and further teaches many of the physical and chemical property limitations of instant claim 1. Those limitations not claimed are deemed to be inherent to the silica. Applicants are invited to show the physical property limitations of the silylated silica taught by Bergstrom et al. such as DBP absorption falls outside the claimed range. The Examiner is maintaining the position that while Bergstrom et al. does not teach pyrogenically prepared silica, the limitation "pyrogenically prepared silica" refers to product-by-process claim language. In such cases, patentability is limited to the product itself. Therefore, for the instant case, a prior art reference satisfying all of the physical and chemical property limitations as well as the nature of the hydrophobic surface-modifying groups of instant claim 1 can be considered to be anticipatory even if the silica taught in said prior art reference is not pyrogenically prepared, as is the case with the Barthel reference.

The rejection of instant claim 2 under Bergstrom et al. has been removed owing to Applicant's amendments. Specifically, Bergstrom et al. does not teach a process wherein the silica undergoes a destructuring step(s).

Applicant's arguments regarding claims 1-8 (Barthel et al.) have been fully considered but they are not persuasive. Specifically, Applicants argue that Barthel et al. does not explicitly teach the surface modified silicas of the instant claims (i.e., those which comprise vinyl or vinyl silyl groups as well as hydrophobic groups). However, as noted above, Barthel et al. explicitly teaches silanes such as vinyltrimethylchlorosilane and divinyltetramethyldisilazane which would inherently yield silanized silicas having both vinylsilyl groups and methylsilyl groups as required by instant claim 1.

Applicants further argue that Barthel et al. does not teach a step where the silica is structurally modified and therefore does not anticipate the claimed process. However, Barthel et al. does explicitly teach the claimed process steps as cited in the rejection above, including the use of a ball-mill (paragraphs 0064-0065). Because Barthel et al. teaches the same process steps as claimed, it follows that the pyrogenically produced silicas taught by Barthel et al. are inherently structurally modified. Specifically, Barthel et al. teaches that the pyrogenically produced silica is first treated with a surface-modifying agent to form a mixture, then the mixture is heated to allow reaction between the silica and the surface-modifying agent, and then the mixture is purified using mechanical means such as agitation and grinding (paragraphs 0061-0069).

Applicants further argue that Barthel et al. does not describe any process conditions which would lead to a "low structure" pyrogenically prepared silica. However, there is nothing

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present in the instant claims regarding a low structure pyrogenically prepared silica; Applicant's are presenting arguments towards limitations which are not claimed.

Applicants further argue that the exemplified use of the treated silica of Barthel et al. is to a toner and it is not clear that a high compacted density is desired in a toner product. However, Barthel et al. further teaches other end uses for the treated silicas including fillers for silicone rubbers (paragraph 0100). Further, the statement that it is not clear that a high compacted bulk density is desired in a toner product is unsupported.

Applicants further argue that Scharfe et al. and Mangold et al. do not disclose step c) of instant claim 2. While this may be true, the Examiner was relying on Scharfe et al. and Mangold et al. merely to provide precedent that pyrogenically prepared silicas have DPB absorption values within the claimed range.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Loewe whose telephone number is (571)270-3298. The examiner can normally be reached on Monday through Friday from 5:30 AM to 3:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./

Examiner, Art Unit 1796

30-Jul-08

/Randy Gulakowski/

Supervisory Patent Examiner, Art Unit 1796